Commonwealth of Virginia

Prepared by the Seat Management Section of the eGov Division

(draft or final)
(date)

Prepared for

(agency name)

Evaluation Period

(begin date) – (end date)

Table of Contents

Commonwealth of Virginia

(agency name and std abbreviation)

TCO Evaluation Report

Period (begin date) – (end date)

SCOPE OF EVALUATION

The (agency name) is an (executive, judicial , legislative) agency of the Commonwealth of Virginia (enter appropriate Cabinet Office if applicable).

Provide agency/organization mission, authorized staffing levels and operating budget (from Appropriation Act)

Include project scope statement here and any special considerations relating to the agency/organization needed to help explain the scope.

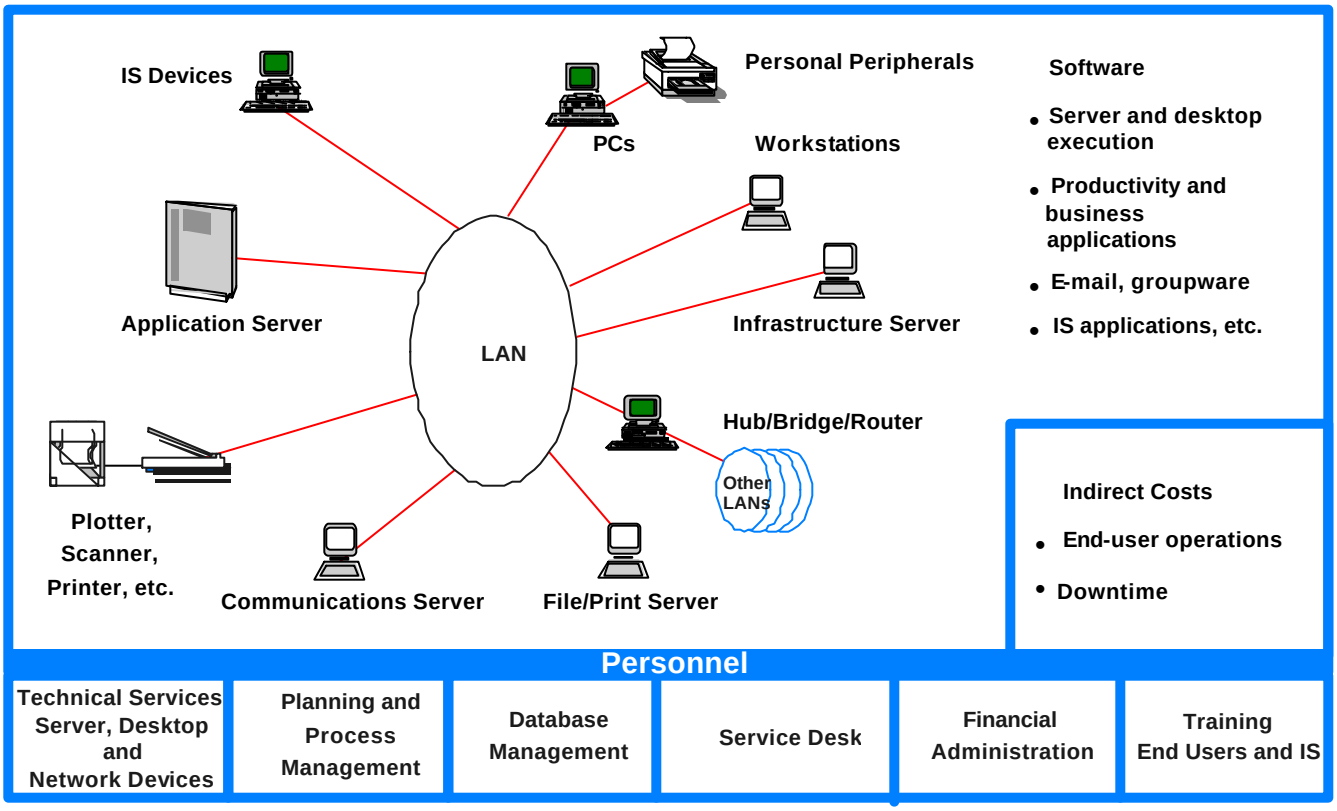
Example - The scope of this evaluation is limited to all computing assets, user staff, IT resources, and costs directly related to using, supporting and maintaining the distributed computing environment of ?? locations of the agency/organization. Physical counts (assets, end users, etc.) will be as of the last day of the reporting period. Servers are considered out of scope if a dumb terminal can run the application unchanged. Internet servers, hardware and software used for exhibits, and the integrated telephone system are out of scope for this evaluation. As appropriate, servers and administration and operations staff shall be prorated across functional areas.

The evaluation period for this TCO study is the most recent 12 months (beginning date through ending date). This TCO evaluation is a comprehensive total cost of ownership study that uses the Gartner TCO Model for Distributed Computing Environments (Figure 1) and the corresponding TCO best practices. This report was developed using the Gartner TCO (DCE) Manager software version ***(4.5.3 or 5.0)***.

Locations

The (specify all applicable locations of the agency/organization are included in this evaluation.

Figure 1
Gartner Distributed Computing Cost Model



Personnel

A total of ***???*** different staff members were identified as users of the distributed computing environment for this evaluation period. (Agency name) makes extensive use of hourly employees in meeting its mission. This includes ***???*** hourly employees that were converted to ***???*** full-time-equivalent employees for the purposes of this evaluation.

The (agency name) supported the equivalent of ***???*** full-time end users during this reporting period. The end users include the agency head, ***???*** classified employees, ***???*** hourly P14 employees, and ***???*** non-state staff/contractors. The unburdened end user average annual salary for the ***???*** end users is $***???***[1] with a ***???***% burden rate.

The (agency name) uses ***???*** internal IS staff to support and maintain its distributed computing environment. This includes ***???*** classified employees and ***???*** hourly P14 employees and/or ***???*** contractors. Detailed activity based timesheet information or records on the work performed by this staff in supporting and maintaining the distributed computing environment are not being kept by the agency. Therefore, this evaluation uses the Gartner

[1] An end user average salary calculations worksheet has been developed to ensure an accurate and consistent unburdened end user average salary is calculated. The Gartner TCO Manager software adds the end user burden rate to this number when it calculates end user operations and downtime costs. For government purposes the 28% burden rate is only applicable to classified employees, therefore, special calculations are required to back this amount out for hourly P14 employees and/or consultants. In addition, 7.65 % must be added to P14 employee salaries to reflect the Commonwealth's share for social security.

defaults to spread the identified outsourced and staff costs across the operations and administration cost categories.

Hardware and Software Costs

Hardware and software costs are expensed in the year they are purchased. However, for the purposes of establishing an initial baseline TCO that removes procurement peaks and valleys, hardware and software costs are distributed over their Gartner recommended useful life. The following rules are used to distribute costs for hardware and software contained in the agency's current inventory:

- Desktop computers and software – purchase costs are expensed over three (3) years.
- Portable computers and software – purchase costs are expensed over two (2) years.
- Servers and software – purchase costs are expensed over five (5) years.
- Peripherals - purchase costs are expensed over three (3) years.
- Network Devices - purchase costs are expensed over three (3) years.
- Hardware and software that are older than Gartner's recommended useful life of the asset at the beginning of the evaluation period are counted as assets with a cost of $0.00.

BASELINE RESULTS

The (agency name) direct and indirect costs from the TCO Manager software are shown in Table 1. The "per user" costs are calculated by dividing the "Total $$" amount for a cost category by the ***???*** end users. The "per client" costs are calculated by dividing the "Total $$" amount for a cost category by the ***???*** clients (total desktops and portables). Detailed cost breakouts for the major costs categories are shown in Attachment B.

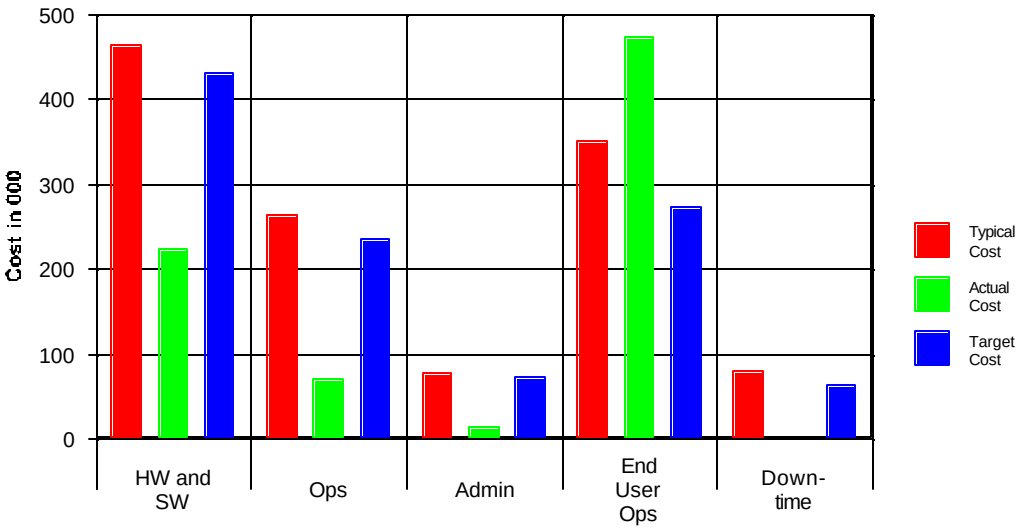
Table 1
Summary – *agency name* TCO Actual Costs

Cost Category	*Total $$*	*$ Per User (???)*	*$ Per Client (Seat) (???)*
DIRECT COSTS			
Hardware & Software	225,164	1,924	1,416
Operations	71,115	608	447
Administration	15,336	131	96
Total Direct Costs	$311,615	$2,663	$1,959
INDIRECT COSTS			
End User Operations	473,187	4,044	2,976
Downtime	1,218	10	8
Total Indirect Costs	$474,406	$4,054	$2,984
ANNUAL TCO	$786,021	$6,717	$4,943

TCO ANALYSIS OVERVIEW

Figure 2 from the TCO Manager software indicates that significant differences exist in (specify which major cost categories) between the actual costs and the simulated typical organization. This section provides reasons and documents why significant differences exit for each major cost category that is significantly different.

Figure 2
TCO Analysis Overview

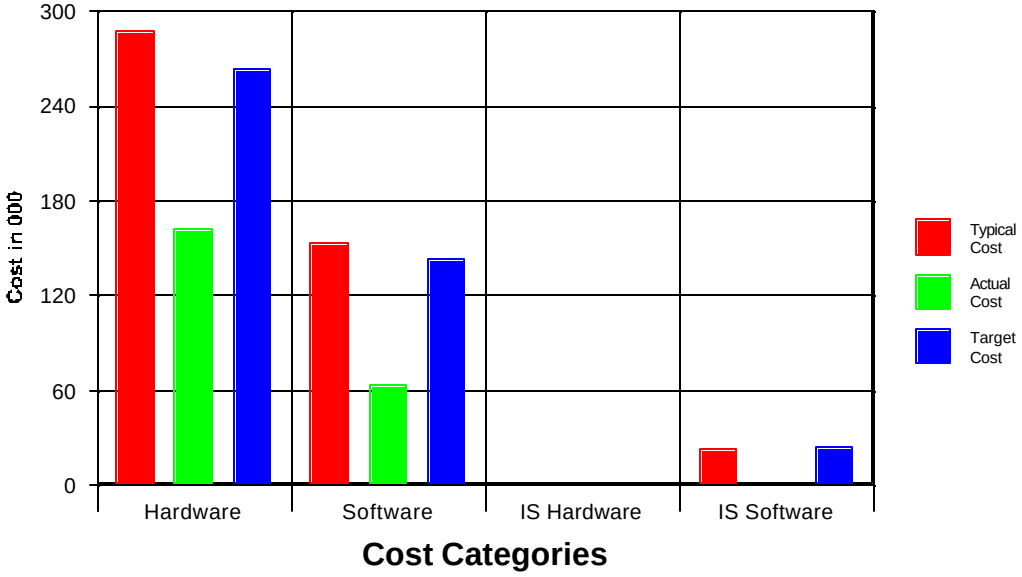


Hardware and Software

Example – agency name provides extensive redundancy for its distributed computing environment using many small inexpensive servers. The current ratio of ?? end users per server is significantly higher than Gartner's average of 27 users per server. The ratio of ?.?? client computers per user is also significantly higher than the Gartner average of 1.1 client computers per user.

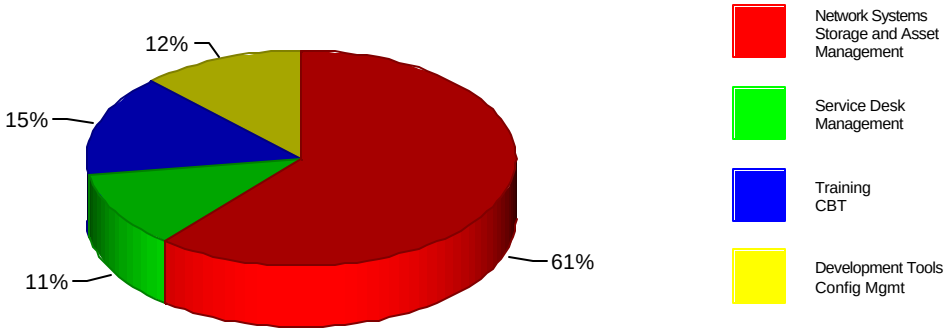
The ?? desktop computers and the ?? portable computers that were beyond their Gartner recommended useful life were carried as assets with no associated actual costs for the evaluation period.

Figure 3
Hardware and Software Cost



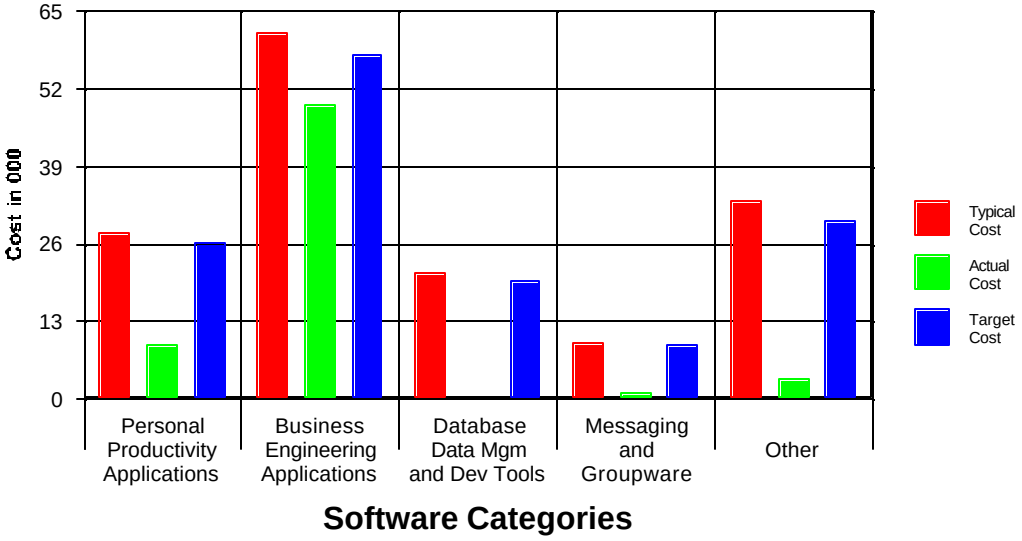
Example - The agency name reported an actual IS software cost of $?? in the network systems, storage and asset management sub-cost category. The TCO model anticipated an expenditure of approximately $??,??? per year for IS software with a cost distribution similar to that shown in Figure 4 for an organization of this size and complexity. The agency does not have any service desk management, training, or other IS related software.

Figure 4
Typical IS Software Cost Distribution by Type



Example - MS Office 2000 Pro is the only personal productivity software product in widespread use in agency name.

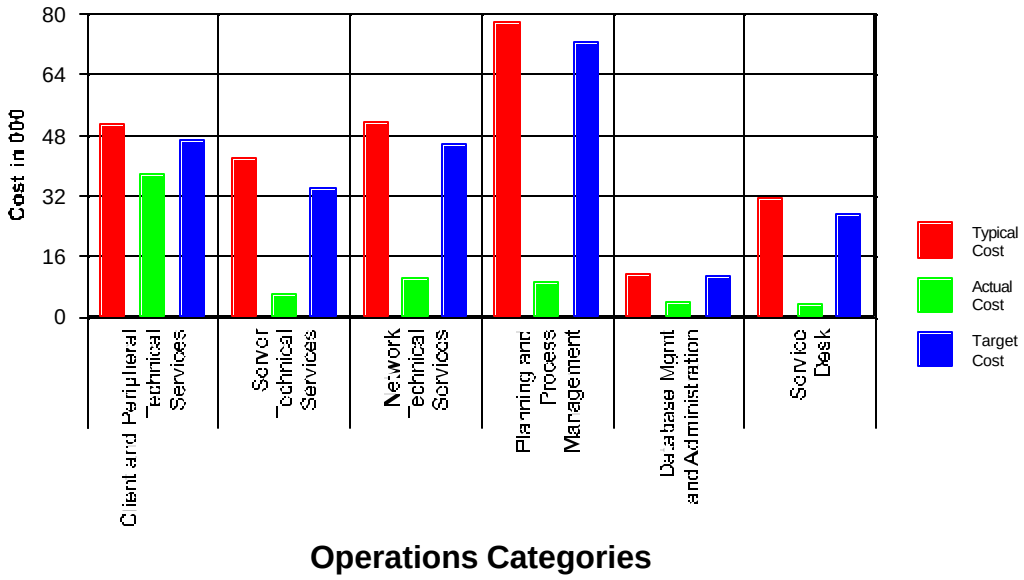
Figure 5
Software Costs



Operations

Example - The Gartner model estimates that ?.?? IS staff are required to support operations for a simulated organization of this size and complexity. A total of ?.?? in-house IT staff and their associated costs are allocated and spread across the operations categories shown in Figure 6.

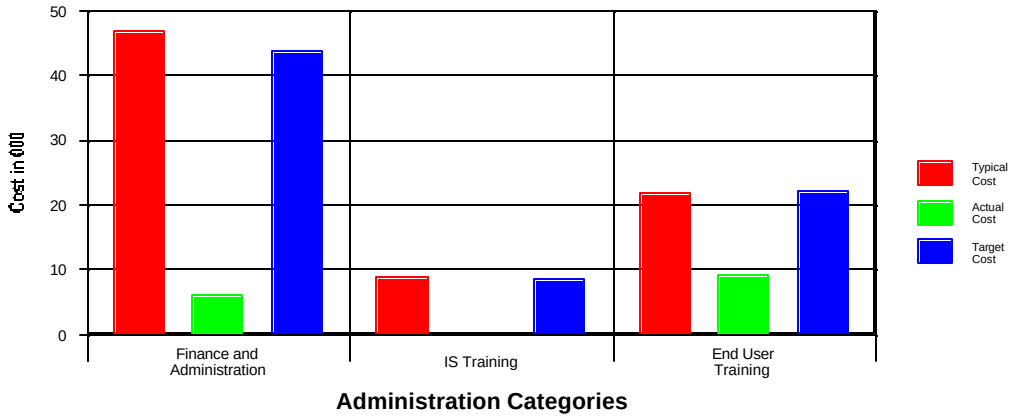
Figure 6
Operations Cost



Administration

Example - The Gartner model estimates that ?.?? FTE staff are needed to perform the Finance and Administration tasks. The agency name allocated a total of ?.?? staff to perform the various tasks in this cost category. These tasks include supervisory management, asset management, budgeting and chargeback, auditing, purchasing, procurement and contract management, and vendor management related to its distributed computing environment. One possible explanation for this difference is an underestimation of the amount of staff time expended performing the various tasks.

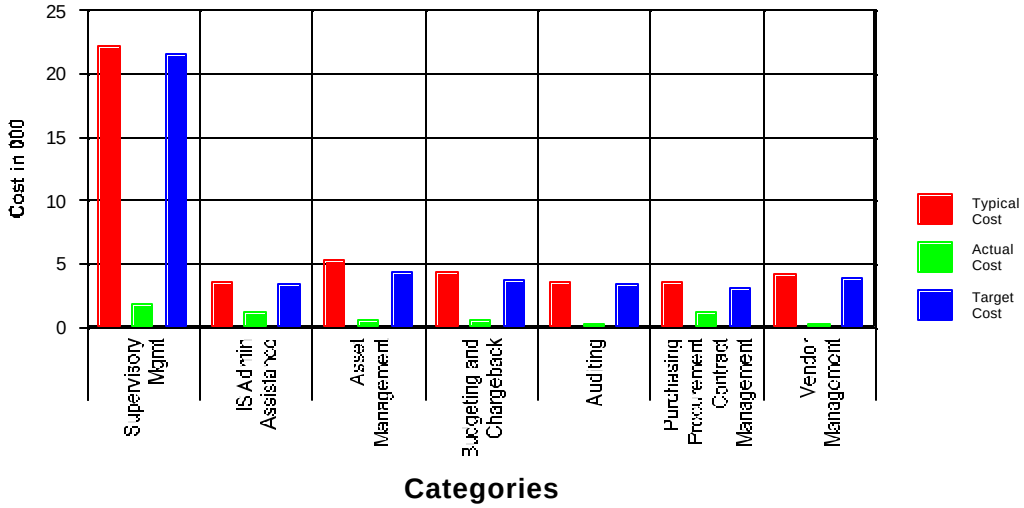
Figure 7
Administration Cost



Example – The agency name reported no costs for IS Training.

Figure 8 shows how the ?.?? FTE staff time was allocated across the tasks associated with the Finance and Administration sub-cost category.

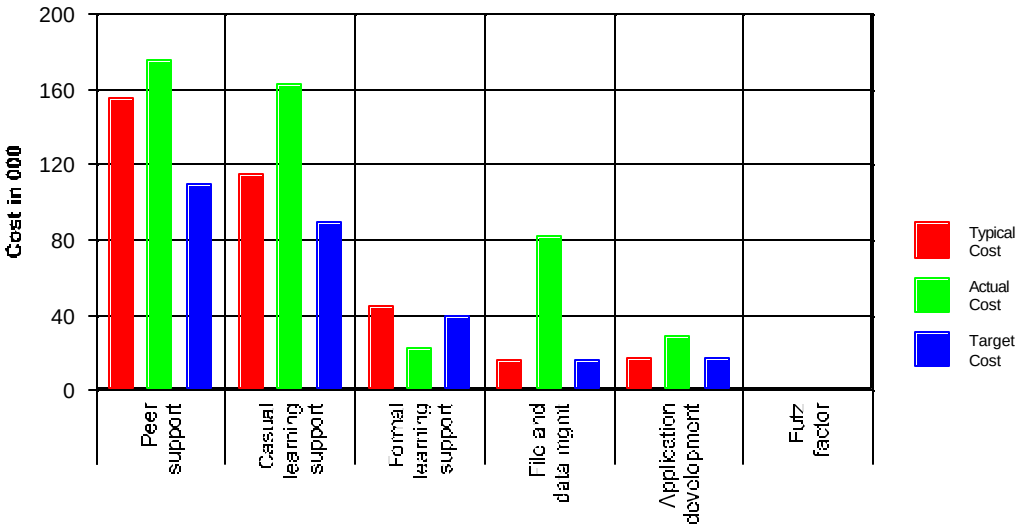
Figure 8
Finance and Administration Tasks



End User Operations

Example - Figure 9 displays the end user operations costs by cost category. Usually when the end user operations actual costs are greater than the simulated organization, an opportunity exists to lower an organization's future total cost of ownership. However, the costs in Figure 9 are somewhat elevated because of the agency's cost of labor. The SMV end user unburdened average salary of $??,??? is considerably higher than the Gartner model's anticipated end user unburdened salary of $29,986.

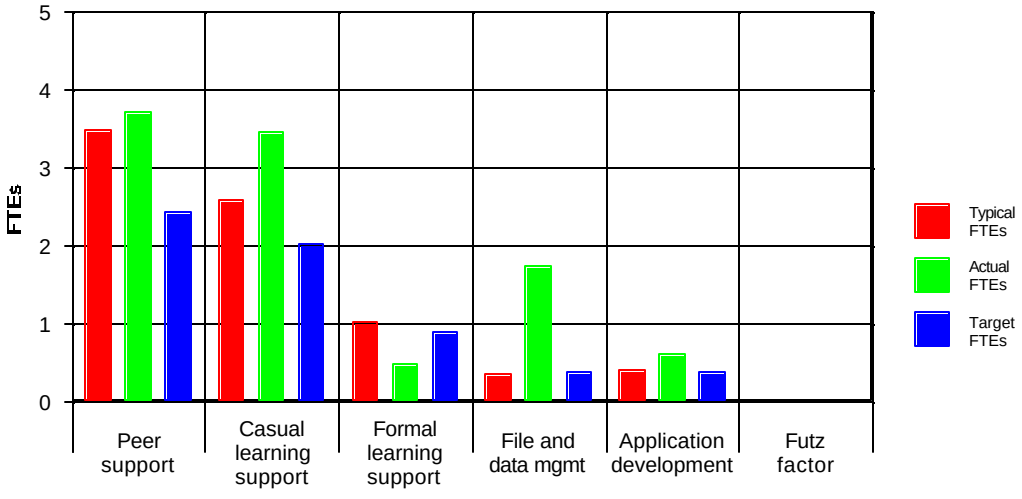
Figure 9
End User Operations Cost



End User Operations Categories

Figure 10 shows the corresponding end user staff time being expended by the agency's staff performing tasks related to using the distributed computing environment.

Figure 10
End User Operations Staff FTEs



End User Operations Categories

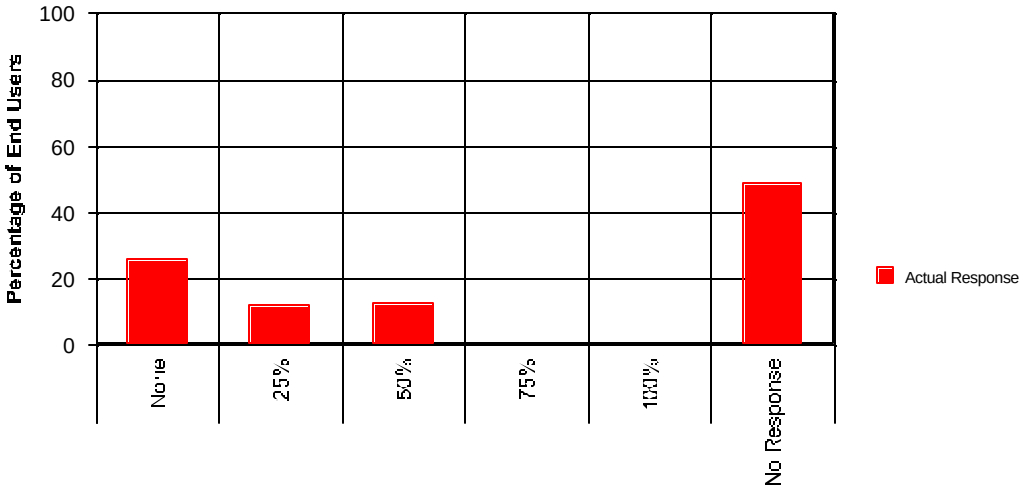
Appendix C contains the actual end user survey results from the ?? survey responses received (??% confidence level). The end user metrics (in hours) from the survey results are shown in Table 2. Significant differences between the "actual" and "typical" metrics in the table identify potential opportunities for improvement that should be researched by the agency name, and as appropriate, corrected. Particular attention should be paid to those metrics that are highlighted.

Table 2
End User Metrics

End User Metrics	Typical	Actual	Target	Actual-Typical	% Difference
Avg. hours per month spent managing files, data and performing backups	55.7	263.3	56.4	207.5	372%
Avg. hours per month spent on programming and scripting	60.2	91.3	58.7	31.1	52%
Avg. hours per year spent in formal classroom learning	1,827.9	876.1	1,601.4	-951.8	-52%
Avg. hours per month spent seeking peer support	325.1	177.8	228.8	-147.3	-45%
Avg. number of hours per month spent helping others	197.3	382.6	138.9	185.3	94%
Avg. hours per month spent on self support	170.9	299.5	119.9	128.7	75%
Avg. hours per month spent on self (casual) learning	216.6	221.1	182.7	4.5	2%

Example - In a distributed computing environment, enterprise data and business files created by end users should be stored and backed up from a file server. Only ??% (Figure 11) of the staff participating in the end user survey reported storing any of their data on the LAN and no one reported storing more than ??% of their data on the LAN.

Figure 11
Quantity of Data Stored on the LAN

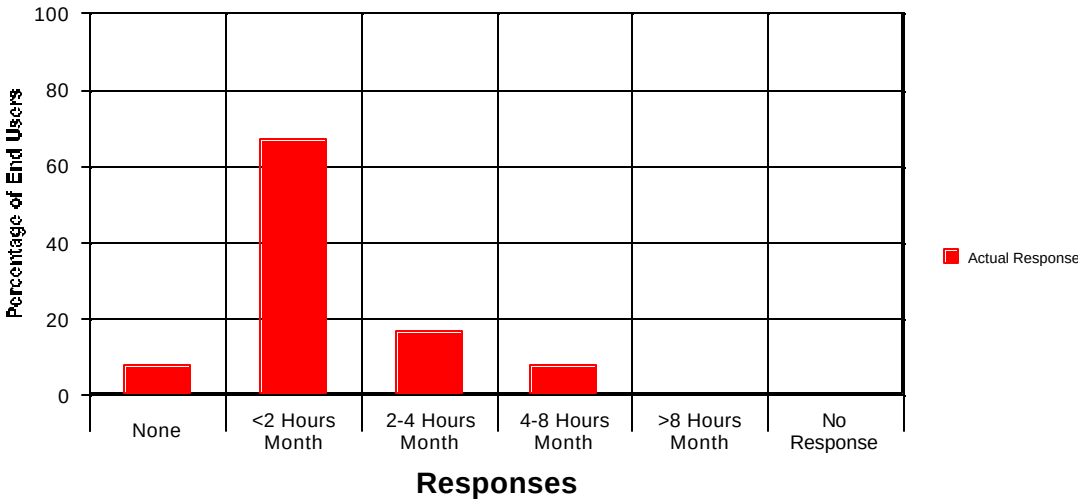


Example - End users spend more than ?.?? times what a similar inefficient organization is expected to spend managing files and data and performing back-ups on their hard drives. This translates to approximately 2,300 staff hours per year at an estimated cost of $60,000 more than the simulated inefficient organization.

Downtime

Example - Twenty-five percent of the users that participated in the survey reported experiencing 2 or more hours of computer or network downtime per month.

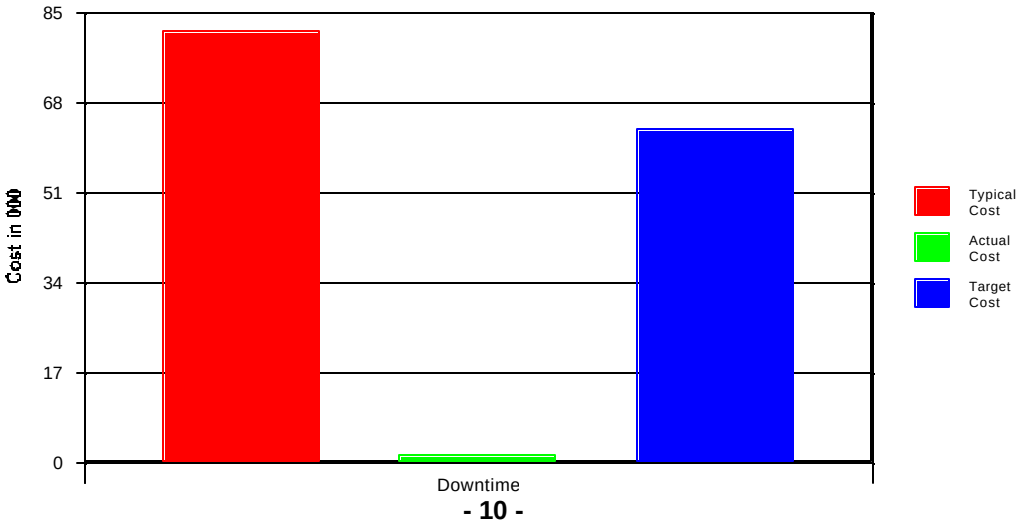
Figure 12
Hours of Downtime Experienced Per Month



Example - The TCO Manager software only calculates a downtime cost for those user responses that indicate they wait while the problem is resolved. These responses resulted in an estimated "Downtime" cost of $?,??? for the reporting period, or $??.?? per user per year.

Example - Actual "downtime" costs calculated for agency name may be significantly underestimated. Unless a survey respondent indicates they wait when their computer or the network is down, a marginal downtime cost for such things as lost staff time related to restarting computers, reporting problems, providing assistance in resolving those problems, and gearing up to work on other tasks or the same task using alternate means is not allocated by the TCO Manager software.

Figure 13
Downtime Cost



TCO ACTUAL COSTS - SEAT MANAGEMENT SERVICES

Attachment A identifies those actual costs from the TCO analysis that can be used for comparison purposes to basic and optional services currently available from the Commonwealth's 3 seat management service vendors. When making comparisons, keep in mind that improvements in any direct cost category (hardware & software, operations, and administration) impact and may significantly reduce costs in other direct and indirect cost categories (end user operations and downtime).

ANALYSIS SUMMARY AND STRATEGIES FOR IMPROVING TCO

Include a summary statement of the organization and the distributed computing environment included in this study. If applicable, significant findings should be included in this area.

Example issue - Only 25% of the staff participating in the end user survey reported storing any of their data on the LAN and no one reported storing more than 50% of their data on the LAN. These responses indicate a risk to enterprise data and business files exists. This should be researched and appropriate corrective actions should be implemented immediately.

End User Survey Results

Example - End users are extremely satisfied with the technology (hardware and software) platforms currently provided by agency name.

Table 3
End User Technology Ratings

	Rating	Survey Responses	No Response
Personal Computers	Poor / Needs Improvement	**0%**	**0%**
	Good / Excellent	**90%**	
Local Area Network	Poor / Needs Improvement	**3%**	**17%**
	Good / Excellent	**60%**	
Productivity Tools	Poor / Needs Improvement	**0%**	**0%**
	Good / Excellent	**90%**	
E-Mail	Poor / Needs Improvement	**0%**	**0%**
	Good / Excellent	**89%**	

Example - With the exception of deskside support, the end user responses indicate there are opportunities for improvement in the phone support, training, and IS communications areas currently provided by agency name internal IS staff.

Table 4
End User IS Support Ratings

	Rating	Survey Responses	No Response
Phone Support	Poor / Needs Improvement	**5%**	**23%**
	Good / Excellent	**37%**	
Deskside Support	Poor / Needs Improvement	**5%**	**3%**
	Good / Excellent	**76%**	
Training	Poor / Needs Improvement	**11%**	**55%**
	Good / Excellent	**19%**	
IS Communication	Poor / Needs Improvement	**24%**	**12%**
	Good / Excellent	**45%**	

Example - While the IS staff is knowledgeable, dedicated, and the best source for technical support, their availability for the extended support hours required may be a determining factor in higher end user operations costs for agency name. The current IS staff allocated to service desk support functions equates to one (1) IS FTE per 1,817 end users, or approximately 4.5 times the Gartner average of 1 IS FTE per 403 end users.

Example - Appropriate training for IS staff and an increase in the staff time allocated to service desk support functions should result in less end user dependency on co-workers and an overall decrease in agency's total cost of ownership.

The total cost of ownership for the agency's distributed computing environment can be lowered through reductions in the complexity of the hardware and software environment and through a more advanced implementation of selected TCO best practices.

Distributed Computing Complexity Index

Complexity is a relative measure of the variety and type of applications, assets, users, processes, policies, and management that can make an environment more expensive (higher complexity) or less expensive (lower complexity).

Table 5
agency name Current Complexity Index

COMPLEXITY MEASURES	COMPLEXITY DRIVERS	CURRENT INDEX
End User Organization	**Number of user types, technical support availability requirements, number of power users, average hours worked per week, and the number of end user moves.**	**5.8**
Software Technology	**Software profile with business applications, Internet and intranet usage, and number of operating systems being supported.**	**4.5**
Hardware Technology	**Client computer refreshment cycle, cascading equipment, and number of portable computers being supported.**	**3.3**
	Overall Current Complexity Index	**4.8**

Index Scale of 1 – 10, with 1 being the least complex and 10 being the most complex.

Strategy for Reducing Complexity

Example - Where possible, the agency should standardize client computers and servers on a standard operating system (Windows 2000). Six operating systems are currently in use within the agency. This includes Windows 98, Windows 2000, and MAC OS on client computers, and Windows NT, Windows 2000 Server, and AIX on servers. Implementing this recommendation will eliminate the need to support most of these operating systems and will reduce the complexity of the current distributed computing environment.

Strategies for Improving TCO Best Practices

Technology improvements, process improvements, and improving people skills are the primary drivers for maximizing or lowering the total cost of ownership for an organization. These improvements are accomplished through the implementation of the TCO best practices across an organization's assets and users. The higher the level (basic, medium, advanced) of implementation of a TCO best practice, the greater the return in lowering that organization's TCO.

The TCO best practices summary is shown in Table 6. The "current scope and level" are based on agency name current implementation of the best practices. Implementation of any of the best practices beyond their current implementation status will provide additional benefits, usually in the form of a reduced total cost of ownership. Those highlighted best practices in Table 6 indicate where agency name should take action to reduce their total cost of ownership.

TCO BEST PRACTICES SUMMARY TABLE 6

Best Practices	Current Scope	Current Level	Target Scope	Target Level
Technology Improvements - Asset Management				
Automated Asset Management	0%	Basic	0%	Basic
Software Inventory	100%	Basic	100%	Medium
Hardware Inventory	100%	Basic	100%	Medium
Automated Software Distribution	10%	Basic	70%	Medium
Technology Improvements - Systems Management				
Virus Detection and Repair	100%	Advanced	100%	Advanced
Systems Management	25%	Basic	25%	Basic
Server Based Client Image Control	50%	Basic	50%	Basic
User State Management and Restore	20%	Basic	20%	Basic
Technology Improvements - Managed PC				
Unattended Power Up	0%	Basic	0%	Basic
Client Hardware Event Management	20%	Basic	20%	Basic
Low Impact Upgradeability	0%	Basic	0%	Basic
Technology Improvements - Scalability				
Scalable Architecture	100%	Basic	100%	Basic
Low Risk, High Quality Vendor/Provider Selection	0%	Basic	0%	Basic
Technology Improvements - Business Protection				
Fault Tolerance	100%	Advanced	100%	Advanced
Automated Backup and Restore	60%	Basic	60%	Basic
Hardware Physical Security Management	95%	Basic	95%	Basic
Technology Improvements - Service Desk				
Service Desk Problem Management and Resolution	0%	Basic	0%	Basic
Client Remote Control	50%	Basic	50%	Basic
Process Improvements - User Management				
Enterprise Policy Management	50%	Medium	50%	Medium
Locked User Environment	50%	Basic	50%	Basic
Data Security Management	95%	Medium	95%	Medium
Change Management	20%	Basic	20%	Basic
Process Improvements - Standardization				
Vendor Standardization	100%	Advanced	100%	Advanced
Platform Standardization	100%	Medium	100%	Medium
Application Standardization	100%	Medium	100%	Medium
Centralized and Optimized Procurement	100%	Basic	100%	Basic
Process Improvements - Practice Management				
More Time Spent Planning Versus Implementing	100%	Basic	100%	Basic
Service Level Tracking and Management	0%	Basic	0%	Basic
Capacity Planning	50%	Medium	50%	Medium
TCO Lifecycle Management	0%	Basic	100%	Basic
People Improvements				
User Training	90%	Basic	90%	Advanced
IS Training	0%	Basic	0%	Basic
IS Staff Highly Motivated	100%	Basic	100%	Basic
Stable IS Organization	100%	Advanced	100%	Advanced

Estimated Results of Implementing the Strategies Presented

The "target" simulated costs (Attachment B, page 3) were developed by changing the level of implementation of the 5 best practices shown in Table 6 and adjusting the assets and complexity model to reflect the strategies presented in this report.

Given these changes, the TCO Manager software estimates a simulated total improvement in the target organization's total cost of ownership of approximately ***???*** percent. A similar improvement can be anticipated in agency's actual total cost of ownership as shown in Table 7.

Table 7
Estimated Improvement of *agency name* TCO Actual Costs

Cost Category	*Total $$*	*$ Per User (???)*	*Estimated Total $$*	*Estimated $ Per User (???)*
DIRECT COSTS				
Hardware & Software	225,164	1,924	209,403	1,790
Operations	71,115	608	64,004	547
Administration	15,336	131	14,723	126
Total Direct Costs	$311,615	$2,663	$288,130	$2,463
INDIRECT COSTS				
End User Operations	473,187	4,044	369,086	3,155
Downtime	1,218	10	938	8
Total Indirect Costs	$474,406	$4,054	$370,024	$3,163
ANNUAL TCO	$786,021	$6,717	$658,154	$5,626

ATTACHMENT A

Actual Costs for Comparison

to Seat Management Services

BASIC SERVICES

The actual hardware costs and operations costs for clients and servers in the following tables can be used for comparison to the corresponding Seat Management Services vendors' basic services for desktops, portables, and servers.

Client (desktops and portables) Basic Services

	Clients Actual Costs	Reference Attachment B
Direct Costs – Client Hardware		
Expensed, depreciation charges, lease charges, upgrades, spares and spare/parts	$99,794	Page 11
Direct Costs – IS Hardware		
Expensed, depreciation charges, lease charges, upgrades, spares and spare/parts	$0	Page 14
Operations Cost – Client and Peripheral Technical Services		
Tier II problem resolution (maintenance agreements)	$7,549	Page 20
Tier III problem resolution (maintenance agreements)	$4,529	Page 20
User administration (adds and changes)	$4,529	Page 20
Operating system support	$1,132	Page 20
Maintenance labor[1]	$1,887	Page 20
Hardware configuration/re-configuration[1]	$3,020	Page 20
Hardware deployment[1]	$1,887	Page 20

[1]**Actual costs include some components for peripherals that are not included in basic services.**

Server Basic Services

	Servers Actual Costs	Reference Attachment B
Direct Costs – Server Hardware		
Expensed, depreciation charges, lease charges, upgrades, spares and spare/parts	$17,882	Page 10
Operations Cost – Server Technical Services		
Tier II problem resolution (maintenance agreements)	$1,216	Page 21
Tier III problem resolution (maintenance agreements)	$729	Page 21
User administration (adds and changes)	$729	Page 21
Operating system support	$182	Page 21
Maintenance labor[1]	$304	Page 21
Hardware configuration/re-configuration[1]	$486	Page 21
Hardware deployment[1]	$304	Page 21

[1]**Actual costs include some components for peripherals that are not included in basic services.**

SERVICE DESK SUPPORT

In addition, part of the Tier 0 (log call) and Tier 1 (remote resolution) service desk actual costs are supported in basic services for hardware (desktops, portables, servers) and operating systems only. (reference page 19, Operations Summary in Attachment B)

OPTIONAL SERVICES

Tables are provided in the standard Gartner TCO Manager software generated report contained in Attachment B that can be used to compare actual costs to optional services that may be provided by one or more of the Seat Management Services vendors. Those tables cover the following cost categories in the Gartner TCO model for distributed computing environments:

- Operations Cost – Server Technical Services (Page 21)
- Operations Cost – Client and Peripheral Technical Services (Page 20)
- Operations Cost – Network Technical Services (Page 22)

ATTACHMENT B

TCO EVALUATION

REPORT SUMMARY DATA

TCO Manager for Distributed Computing

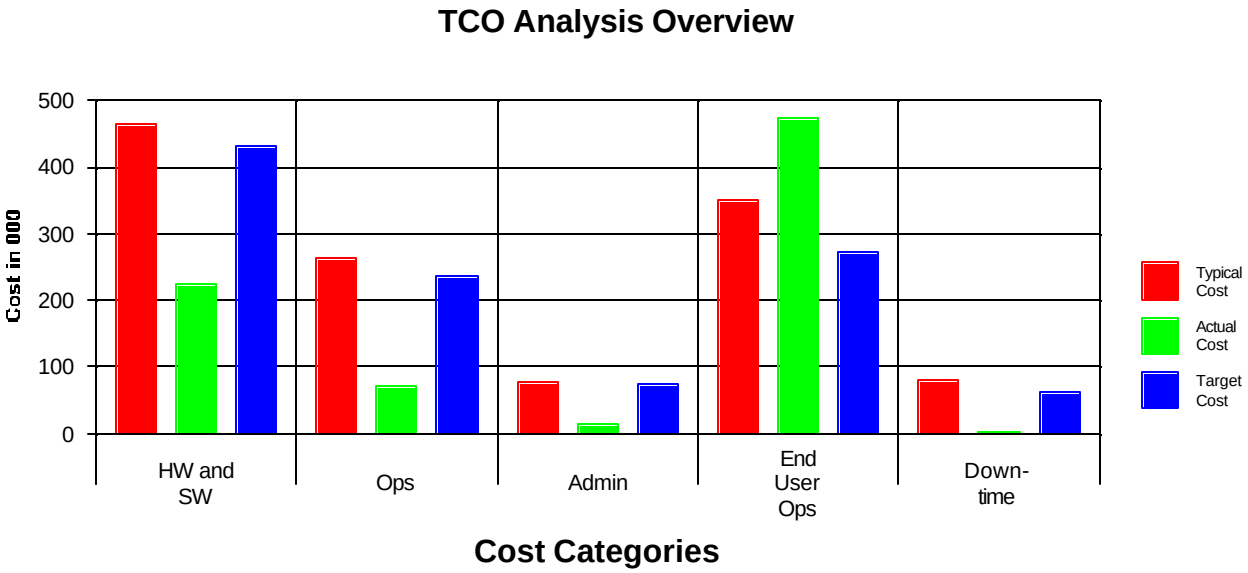
TCO Analysis - TCO EVALUATION REPORT SUMMARY DATA

Prepared for:
Mr. C. E. Jones, Director
Seat Mgt Section Example Agency

Prepared by:
S. Smith
Chuck Tyger

Prepared on:
10/4/2001

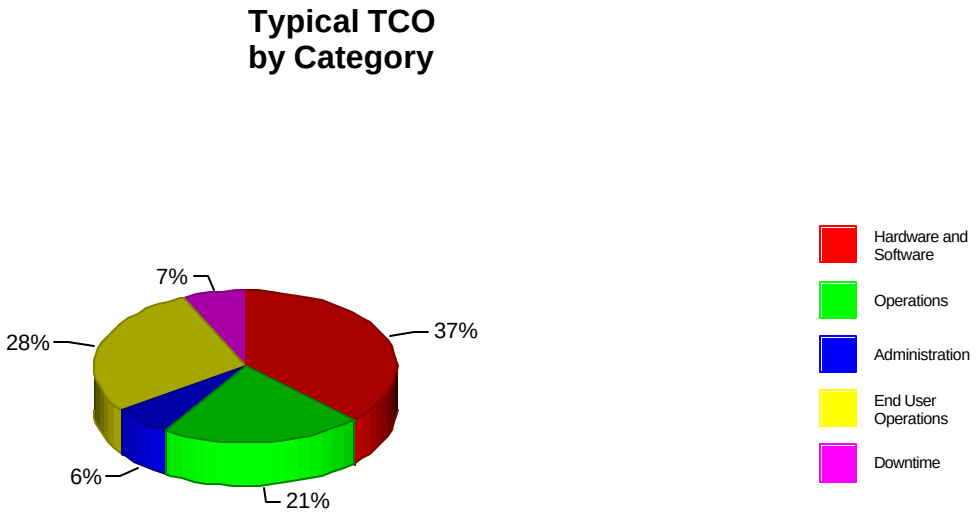
TCO Analysis Overview Bar Chart



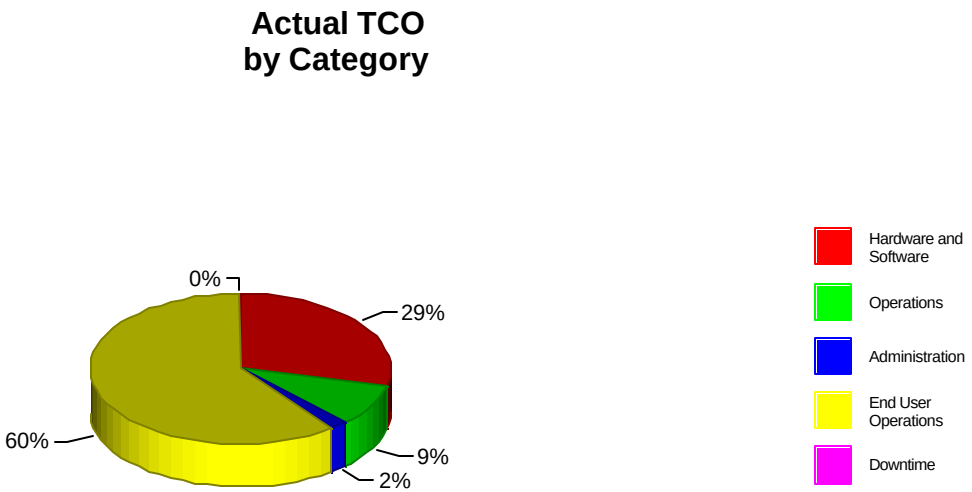
TCO Analysis Overview

TCO Analysis Overview	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Direct Costs (budgeted)									
Hardware and Software	$463,657	$225,164	$430,931	-$238,493	-51%	$205,767	91%	-$32,726	-7%
Operations (formerly Management)	$264,776	$71,115	$237,102	-$193,661	-73%	$165,987	233%	-$27,673	-10%
Administration (formerly Support)	$77,894	$15,336	$74,619	-$62,558	-80%	$59,282	387%	-$3,275	-4%
Total Direct Costs	$806,327	$311,615	$742,652	-$494,712	-61%	$431,037	138%	-$63,675	-8%
Indirect Costs (unbudgeted)									
End User Operations (formerly End User IS)	$350,448	$473,187	$273,314	$122,739	35%	-$199,874	-42%	-$77,134	-22%
Downtime	$81,595	$1,218	$62,959	-$80,376	-99%	$61,741	5067%	-$18,636	-23%
Total Indirect Costs	$432,043	$474,406	$336,273	$42,363	10%	-$138,133	-29%	-$95,770	-22%
Annual Total Cost of Ownership (TCO)	$1,238,370	$786,021	$1,078,925	-$452,349	-37%	$292,904	37%	-$159,445	-13%
Total TCO as a Percentage of Annual Revenue	13.8%	8.7%	12.0%	-5.0%	-37%	3.3%	37.3%	-1.8%	-12.9%
Total Direct Costs as a Percentage of Annual Revenue	9.0%	3.5%	8.3%	-5.5%	-61%	4.8%	138.3%	-0.7%	-7.9%

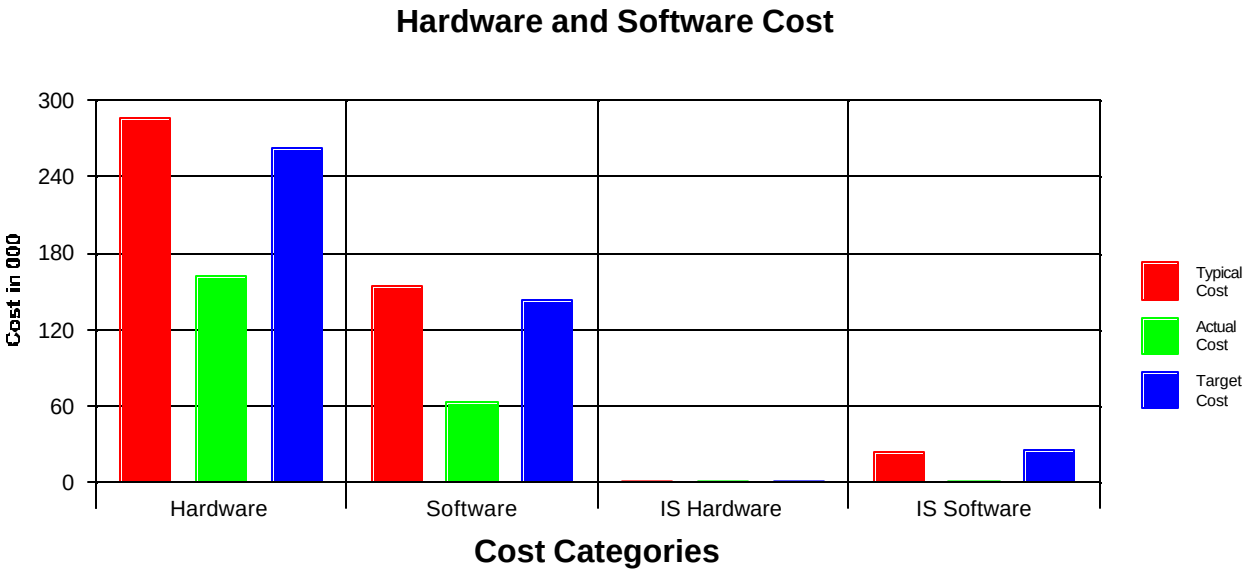
Typical TCO by Category Pie Chart



Actual TCO by Category Pie Chart



Hardware and Software Cost Bar Chart



Hardware and Software Cost Summary

Hardware and Software Cost Summary	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Hardware	$287,003	$162,017	$263,493	-$124,986	-44%	$101,476	63%	-$23,510	-8%
Software	$153,400	$63,085	$142,784	-$90,315	-59%	$79,699	126%	-$10,616	-7%
IS Hardware	$0	$0	$0	$0	-	$0	-	$0	-
IS Software	$23,254	$62	$24,654	-$23,192	-100%	$24,592	39665%	$1,400	6%
Hardware and Software Total Annual Costs	$463,657	$225,164	$430,931	-$238,493	-51%	$205,767	91%	-$32,726	-7%

Network Summary

Network Summary	Current	Target
Servers	13.00	13.00
Client - Desktop	139	139
Client - Mobile	20	20
Peripherals	32.00	32.00
Network Devices	39.00	39.00
Total Assets	243.00	243.00
Total Clients per Users	1	1

Hardware Cost

Hardware Cost	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Hardware									
Expensed & Depreciated	$257,008	$152,517	$238,833	-$104,491	-41%	$86,316	57%	-$18,176	-7%
Lease charges	$0	$0	$0	$0	-	$0	-	$0	-
Upgrades	$8,245	$5,750	$5,940	-$2,495	-30%	$190	3%	-$2,305	-28%
Spares/spare parts	$7,052	$320	$5,768	-$6,732	-95%	$5,448	1703%	-$1,284	-18%
Supplies	$14,698	$3,430	$12,953	-$11,268	-77%	$9,523	278%	-$1,745	-12%
Total Hardware Costs	$287,003	$162,017	$263,493	-$124,986	-44%	$101,476	63%	-$23,510	-8%

Actual Server Hardware Expenses
Actual Client Hardware Expenses
Actual Peripheral Hardware Expenses
Annual Network Device Hardware Expenses

Actual Server Hardware Expenses

Actual Server Hardware Expenses	File / Print	Application / Database	E-Mail / Inter(tra)net / Groupware	Utility / Communications / Other
Expensed servers, not depreciated	$0	$0	$0	$0
Depreciation charges	$1,773	$7,765	$2,491	$2,853
Lease charges	$0	$0	$0	$0
Upgrades	$481	$881	$881	$632
Spares/spare parts	$31	$31	$31	$32
Supplies	$50	$120	$50	$130

Actual Client Hardware Expenses

Actual Client Hardware Expenses	Desktop	Mobile	Workstation	Terminals / Other
Expensed client computers, not depreciated	$0	$0	$0	$0
Depreciation charges	$72,026	$27,118	$0	$0
Lease charges	$0	$0	$0	$0
Upgrades	$505	$20	$0	$0
Spares/spare parts	$125	$0	$0	$0
Supplies	$1,005	$45	$0	$0

Actual Peripheral Hardware Expenses

Actual Peripheral Hardware Expenses	Personal Printer / Plotter	Dept. / Enterprise Printer / Plotter	Other Peripherals
Expensed peripherals, not depreciated	$0	$0	$0
Depreciation charges	$415	$10,904	$2,180
Lease charges	$0	$0	$0
Upgrades	$0	$350	$0
Spares/spare parts	$0	$70	$0
Supplies	$230	$1,620	$0

Actual Network Device Hardware Expenses

Actual Network Device Hardware	Expenses
Expensed network devices, not depreciated	$0
Depreciation charges	$24,992
Lease charges	$0
Upgrades	$2,000
Spares/spare parts	$0
Supplies	$180

IS Hardware Cost

IS Hardware Cost	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
IS Hardware									
Expensed & Depreciated	$0	$0	$0	$0	-	$0	-	$0	-
Lease charges	$0	$0	$0	$0	-	$0	-	$0	-
Upgrades	$0	$0	$0	$0	-	$0	-	$0	-
Spares/spare parts	$0	$0	$0	$0	-	$0	-	$0	-
Supplies	$0	$0	$0	$0	-	$0	-	$0	-
Total IS Hardware Costs	$0	$0	$0	$0	-	$0	-	$0	-

Actual IS Hardware Expenses

Actual IS Hardware Expenses

Actual IS Hardware Expenses	Network, Systems, Storage and Asset Management	Service Desk Management	Training Devices	Test / Other
Expensed IS hardware, not depreciated				
Depreciation charges				
Lease charges				
Upgrades				
Spares/spare parts				
Supplies				

Software Cost

Software Cost	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Software									
Personal productivity and personal database applications	$28,008	$9,053	$26,326	-$18,955	-68%	$17,273	191%	-$1,682	-6%
Business and engineering applications	$61,291	$49,410	$57,606	-$11,881	-19%	$8,196	17%	-$3,685	-6%
Database, data management and development tools	$21,191	$84	$19,915	-$21,107	-100%	$19,831	23609%	-$1,276	-6%
Messaging and groupware	$9,587	$1,167	$9,081	-$8,420	-88%	$7,914	678%	-$506	-5%
Other	$33,323	$3,371	$29,856	-$29,952	-90%	$26,485	786%	-$3,467	-10%
Total Software Costs	$153,400	$63,085	$142,784	-$90,315	-59%	$79,699	126%	-$10,616	-7%

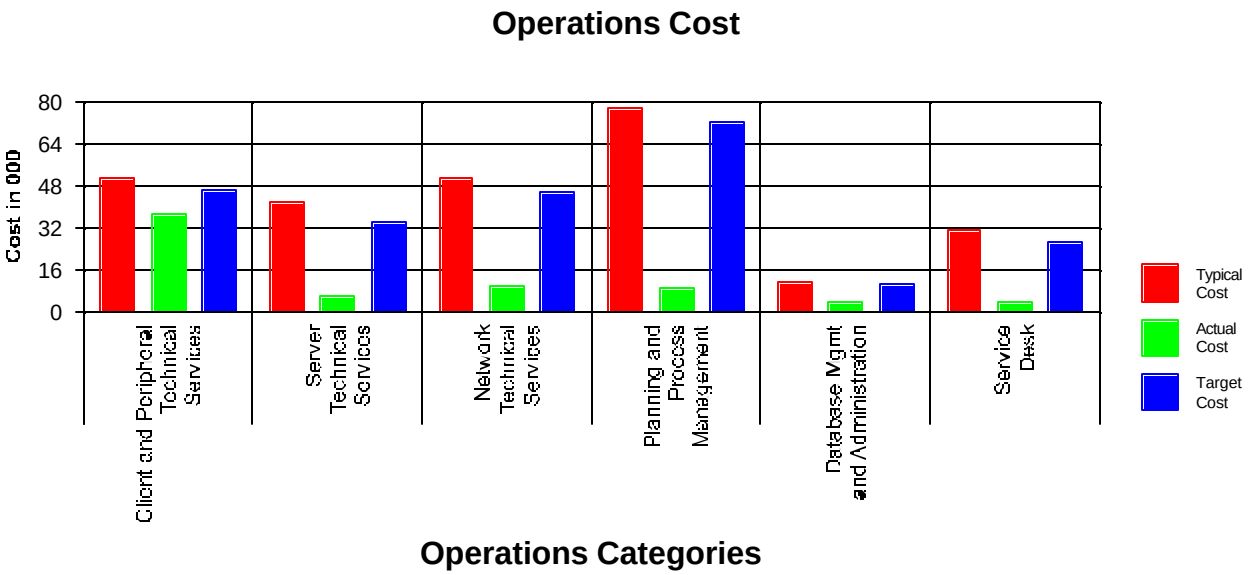
Actual Server Software Expenses
Actual Client Software Expenses

IS Software Cost

IS Software Cost	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
IS Software									
Network, systems, storage and asset management	$14,180	$62	$15,400	-$14,118	-100%	$15,338	24739%	$1,220	9%
Service desk management	$2,664	$0	$2,583	-$2,664	-100%	$2,583	Undefined	-$81	-3%
Training software and CBT	$3,555	$0	$3,902	-$3,555	-100%	$3,902	Undefined	$347	10%
Test / other	$2,856	$0	$2,769	-$2,856	-100%	$2,769	Undefined	-$87	-3%
Total IS Software Costs	$23,254	$62	$24,654	-$23,192	-100%	$24,592	39665%	$1,400	6%

Actual IS Software Expenses

Operations Cost Bar Chart



Operations Summary

Operations Summary	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Operations Costs									
Client and Peripheral Technical Services	$50,980	$37,744	$46,634	-$13,236	-26%	$8,890	24%	-$4,347	-9%
Server Technical Services	$41,909	$6,078	$34,105	-$35,831	-85%	$28,026	461%	-$7,804	-19%
Network Technical Services	$51,353	$10,268	$45,944	-$41,085	-80%	$35,676	347%	-$5,409	-11%
Planning and Process Management	$77,748	$9,489	$72,743	-$68,259	-88%	$63,254	667%	-$5,005	-6%
Database Management and Administration (DBAs)	$11,201	$3,985	$10,582	-$7,216	-64%	$6,597	166%	-$619	-6%
Service Desk (Tier 0 and I support)	$31,584	$3,550	$27,094	-$28,034	-89%	$23,544	663%	-$4,490	-14%
Total Annual Operations Costs	$264,776	$71,115	$237,102	-$193,661	-73%	$165,987	233%	-$27,673	-10%
Operations Staff FTEs									
Client and Peripheral Technical Services	0.75	0.72	0.68	-0.03	-4%	-0.04	-6%	-0.07	-10%
Server Technical Services	0.60	0.10	0.51	-0.50	-83%	0.41	406%	-0.09	-16%
Network Technical Services	0.68	0.18	0.61	-0.50	-73%	0.43	236%	-0.07	-11%
Planning and Process Management	0.94	0.10	0.88	-0.84	-89%	0.78	776%	-0.06	-7%
Database Management and Administration (DBAs)	0.13	0.04	0.12	-0.09	-68%	0.08	199%	-0.01	-6%
Service Desk (Tier 0 and I support)	0.56	0.06	0.48	-0.50	-89%	0.42	699%	-0.08	-14%
Total Operations Staff FTEs	3.65	1.20	3.26	-2.45	-67%	2.06	172%	-0.38	-11%
Users per Operations Staff FTEs	32.1	97.5	35.8	65.4	204%	-61.7	-63%	3.8	12%

Service Desk Metrics
Top 10 Service Desk Calls
Top 10 Dispatched Support Calls

Actual Activity Analysis

Allocation for Actual Cost
Allocation for Actual Staff FTEs

Client and Peripheral Technical Services Cost

Client and Peripheral Technical Services Cost	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Client and Peripheral Technical Services									
Tier II problem resolution	$9,520	$7,549	$7,441	-$1,971	-21%	-$107	-1%	-$2,079	-22%
Tier III problem resolution	$1,605	$4,529	$1,343	$2,924	182%	-$3,186	-70%	-$262	-16%
Traffic management and planning	$2,631	$1,887	$2,500	-$744	-28%	$613	32%	-$131	-5%
Performance tuning	$2,235	$1,132	$1,771	-$1,103	-49%	$639	56%	-$464	-21%
User administration (add and changes)	$2,902	$4,529	$1,929	$1,627	56%	-$2,600	-57%	-$973	-34%
Operating system support	$1,334	$1,132	$1,415	-$201	-15%	$283	25%	$82	6%
Maintenance labor	$5,424	$1,887	$5,227	-$3,536	-65%	$3,339	177%	-$197	-4%
Software deployment	$10,947	$4,907	$7,809	-$6,040	-55%	$2,903	59%	-$3,138	-29%
Application management	$3,994	$1,132	$3,678	-$2,861	-72%	$2,545	225%	-$316	-8%
Hardware configuration/re-configuration	$1,997	$3,020	$2,158	$1,022	51%	-$861	-29%	$161	8%
Hardware deployment	$1,376	$1,887	$1,310	$511	37%	-$577	-31%	-$66	-5%
Disk and file management	$1,027	$1,132	$1,539	$105	10%	$407	36%	$512	50%
Storage capacity planning	$846	$755	$783	-$91	-11%	$28	4%	-$63	-7%
Backup, archiving and recovery	$5,030	$1,887	$7,618	-$3,143	-62%	$5,731	304%	$2,589	51%
Repository management	$114	$377	$112	$264	232%	-$266	-70%	-$2	-2%
Total Annual Client and Peripheral Technical Services Cost	$50,980	$37,744	$46,634	-$13,236	-26%	$8,890	24%	-$4,347	-9%

Server Technical Services Cost

Server Technical Services Cost	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Server Technical Services									
Tier II problem resolution	$1,995	$1,216	$1,454	-$780	-39%	$239	20%	-$541	-27%
Tier III problem resolution	$4,507	$729	$3,696	-$3,778	-84%	$2,967	407%	-$811	-18%
Traffic management and planning	$660	$304	$553	-$356	-54%	$249	82%	-$107	-16%
Performance tuning	$886	$182	$591	-$704	-79%	$409	224%	-$295	-33%
User administration (add and changes)	$2,144	$729	$1,572	-$1,415	-66%	$843	116%	-$572	-27%
Operating system support	$2,832	$182	$2,609	-$2,650	-94%	$2,427	1331%	-$223	-8%
Maintenance labor	$1,471	$304	$1,313	-$1,167	-79%	$1,009	332%	-$158	-11%
Software deployment	$4,697	$790	$2,852	-$3,906	-83%	$2,062	261%	-$1,844	-39%
Application management	$1,919	$182	$1,268	-$1,737	-90%	$1,086	596%	-$651	-34%
Hardware configuration/re-configuration	$10,803	$486	$9,840	-$10,316	-95%	$9,353	1923%	-$963	-9%
Hardware deployment	$3,327	$304	$2,916	-$3,023	-91%	$2,612	860%	-$410	-12%
Disk and file management	$1,365	$182	$1,069	-$1,182	-87%	$887	486%	-$296	-22%
Storage capacity planning	$873	$122	$686	-$751	-86%	$564	464%	-$187	-21%
Backup, archiving and recovery	$2,512	$304	$1,910	-$2,208	-88%	$1,606	529%	-$601	-24%
Repository management	$1,919	$61	$1,775	-$1,858	-97%	$1,714	2820%	-$144	-8%
Total Annual Server Technical Services Costs	$41,909	$6,078	$34,105	-$35,831	-85%	$28,026	461%	-$7,804	-19%

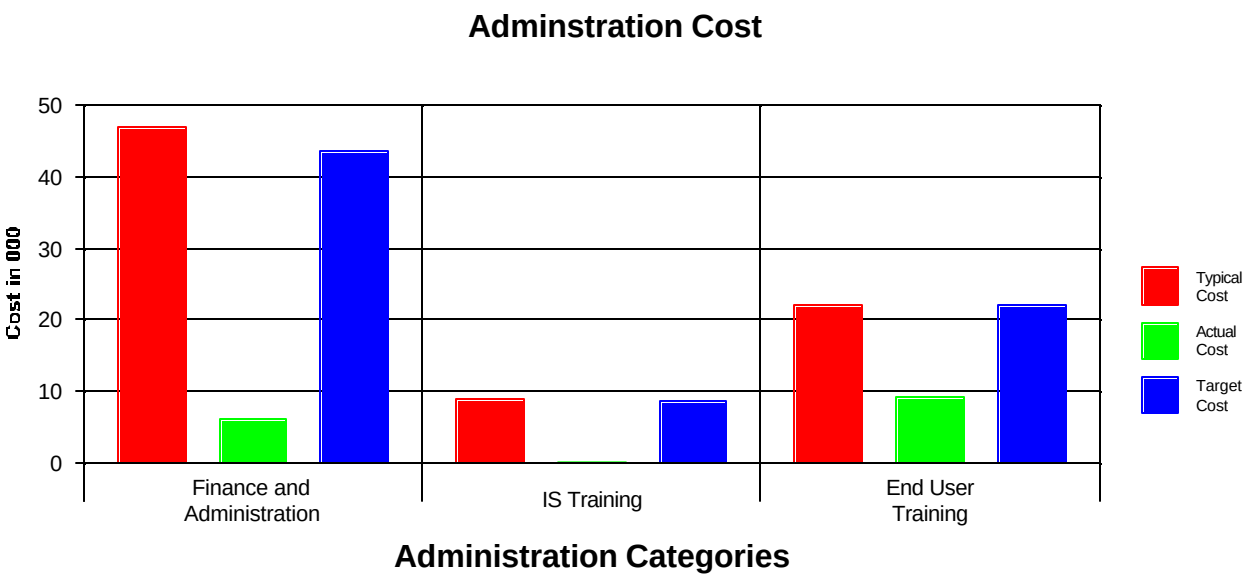
Network Technical Services Cost

Network Technical Services Cost	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Network Technical Services									
Tier II problem resolution	$11,630	$2,054	$9,042	-$9,576	-82%	$6,988	340%	-$2,588	-22%
Tier III problem resolution	$6,393	$1,232	$5,269	-$5,161	-81%	$4,036	328%	-$1,125	-18%
Traffic management and planning	$12,633	$513	$12,005	-$12,120	-96%	$11,491	2238%	-$628	-5%
Performance tuning	$7,744	$308	$7,334	-$7,436	-96%	$7,026	2281%	-$409	-5%
User administration (add and changes)	$0	$1,232	$0	$1,232	Undefined	-$1,232	-100%	$0	-
Operating system support	$0	$308	$0	$308	Undefined	-$308	-100%	$0	-
Maintenance labor	$2,615	$513	$2,469	-$2,102	-80%	$1,956	381%	-$147	-6%
Software deployment	$0	$1,335	$0	$1,335	Undefined	-$1,335	-100%	$0	-
Application management	$0	$308	$0	$308	Undefined	-$308	-100%	$0	-
Hardware configuration/re-configuration	$655	$821	$609	$166	25%	-$213	-26%	-$47	-7%
Hardware deployment	$9,682	$513	$9,217	-$9,169	-95%	$8,704	1695%	-$465	-5%
Disk and file management	$0	$308	$0	$308	Undefined	-$308	-100%	$0	-
Storage capacity planning	$0	$205	$0	$205	Undefined	-$205	-100%	$0	-
Backup, archiving and recovery	$0	$513	$0	$513	Undefined	-$513	-100%	$0	-
Repository management	$0	$103	$0	$103	Undefined	-$103	-100%	$0	-
Total Annual Network Technical Services Cost	$51,353	$10,268	$45,944	-$41,085	-80%	$35,676	347%	-$5,409	-11%

Planning and Process Management Cost

Planning and Process Management Cost	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Planning and Process Management									
Account management	$10,602	$1,898	$9,946	-$8,705	-82%	$8,048	424%	-$656	-6%
Systems research, planning and product management	$17,963	$1,898	$17,119	-$16,065	-89%	$15,221	802%	-$844	-5%
Evaluation and purchase	$18,246	$2,847	$17,581	-$15,399	-84%	$14,734	518%	-$665	-4%
Security and virus protection	$30,257	$1,423	$27,457	-$28,833	-95%	$26,034	1829%	-$2,799	-9%
Business recovery	$681	$1,423	$640	$743	109%	-$783	-55%	-$41	-6%
Total Annual Planning and Process Management Cost	$77,748	$9,489	$72,743	-$68,259	-88%	$63,254	667%	-$5,005	-6%

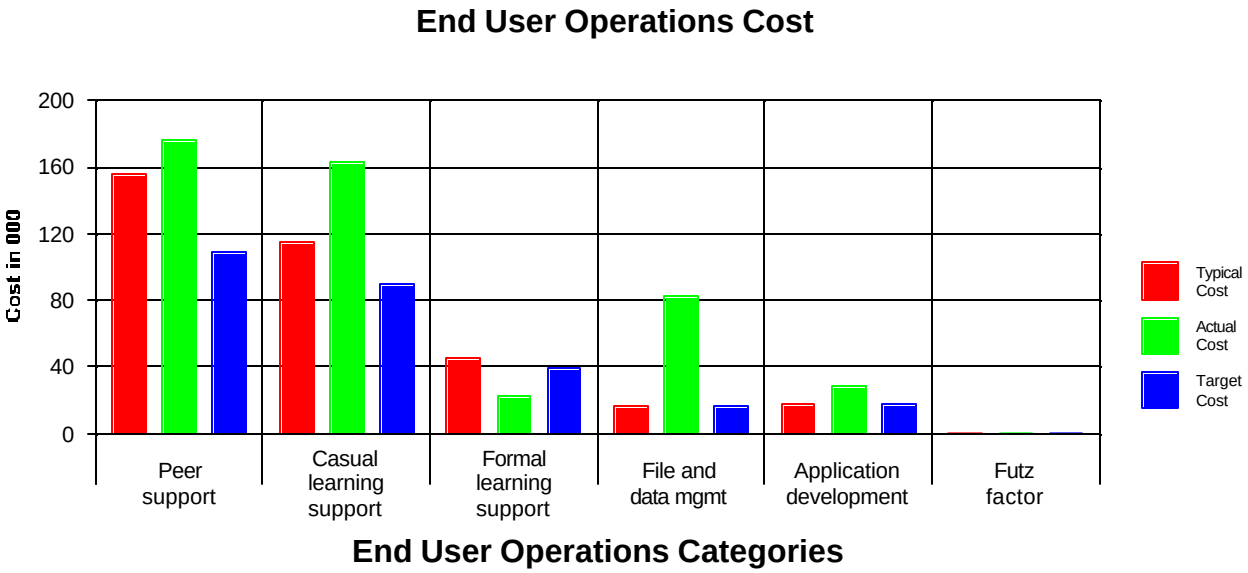
Administration Cost Bar Chart



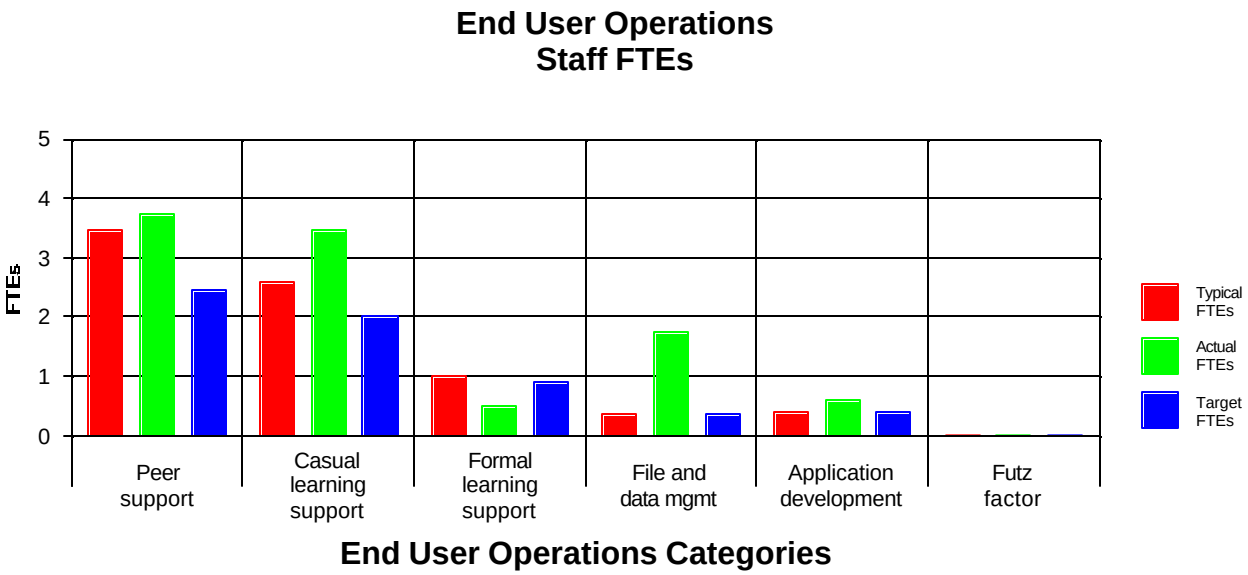
Administration Summary

Administration Summary	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Administration Costs									
Finance and Administration	$47,020	$6,183	$43,757	-$40,837	-87%	$37,574	608%	-$3,263	-7%
IS Training	$8,909	$0	$8,716	-$8,909	-100%	$8,716	Undefined	-$193	-2%
End User Training	$21,965	$9,154	$22,146	-$12,811	-58%	$12,992	142%	$181	1%
Total Annual Administration Costs	$77,894	$15,336	$74,619	-$62,558	-80%	$59,282	387%	-$3,275	-4%
Administration Staff FTEs									
Finance and Administration	0.56	0.08	0.52	-0.48	-86%	0.44	552%	-0.04	-7%
IS Training	0.12	0.00	0.12	-0.12	-100%	0.12	Undefined	0.00	-2%
End User Training	0.31	0.40	0.31	0.09	31%	-0.09	-23%	0.00	1%
Total Annual Administration Staff FTEs	0.99	0.48	0.95	-0.51	-52%	0.47	98%	-0.04	-4%
Users per Administration Staff FTEs	117.9	243.8	122.9	125.9	107%	-120.8	-50%	5.1	4%
Allocation for Actual Cost									
Allocation for Actual Staff FTEs									

End User Operations Cost Bar Chart



End User Operations Staff FTEs Bar Chart



End User Operations Summary

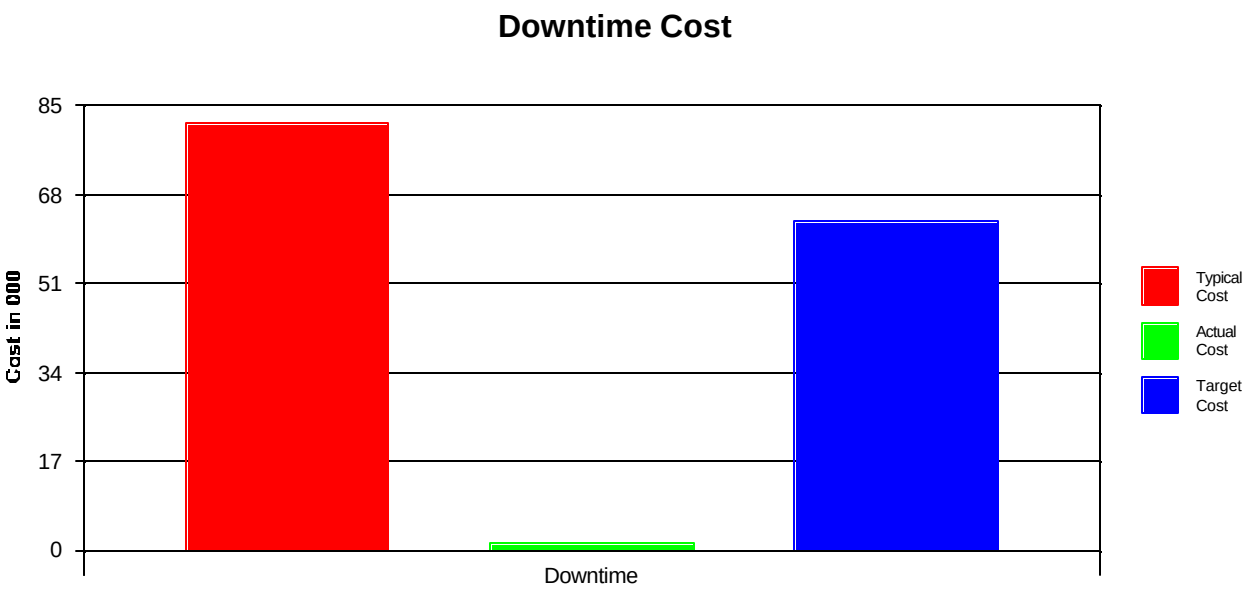
End User Operations Summary	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
End User Operations Costs									
Peer support	$155,391	$175,784	$109,377	$20,393	13%	-$66,407	-38%	-$46,014	-30%
Casual learning & self support	$115,266	$163,307	$90,006	$48,041	42%	-$73,301	-45%	-$25,260	-22%
Formal learning	$45,314	$22,900	$39,697	-$22,414	-49%	$16,797	73%	-$5,617	-12%
File and data management	$16,578	$82,571	$16,775	$65,993	398%	-$65,796	-80%	$196	1%
Application development	$17,899	$28,625	$17,459	$10,726	60%	-$11,166	-39%	-$440	-2%
Futz Factor Out of Scope	$0	$0	$0	$0	-	$0	-	$0	-
Total Annual End User Operations Costs	$350,448	$473,187	$273,314	$122,739	35%	-$199,874	-42%	-$77,134	-22%
End User Operations Staff FTEs									
Peer support	3.48	3.74	2.45	0.25	7%	-1.28	-34%	-1.03	-30%
Casual learning & self support	2.58	3.47	2.02	0.89	34%	-1.45	-42%	-0.57	-22%
Formal learning	1.02	0.49	0.89	-0.53	-52%	0.40	83%	-0.13	-12%
File and data management	0.37	1.76	0.38	1.38	372%	-1.38	-79%	0.00	1%
Application development	0.40	0.61	0.39	0.21	52%	-0.22	-36%	-0.01	-2%
Futz Factor Out of Scope	0.00	0.00	0.00	0.00	-	0.00	-	0.00	-
Total End User Operations Staff FTEs	7.85	10.06	6.13	2.20	28%	-3.93	-39%	-1.73	-22%
End User Metrics Comparison									

End User Metrics

End User Metrics	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Avg. hours per month spent managing files, data and performing backups	55.7	263.3	56.4	207.5	372%	-206.9	-79%	0.7	1%
Avg. hours per month spent on programming and scripting	60.2	91.3	58.7	31.1	52%	-32.6	-36%	-1.5	-2%
Avg. hours per year spent in formal classroom learning	1,827.9	876.1	1,601.4	-951.8	-52%	725.2	83%	-226.6	-12%
Avg. hours per month spent seeking peer support	325.1	177.8	228.8	-147.3	-45%	51.0	29%	-96.3	-30%
Avg. number of hours per month spent helping others	197.3	382.6	138.9	185.3	94%	-243.7	-64%	-58.4	-30%
Avg. hours per month spent on self support	170.9	299.5	119.9	128.7	75%	-179.6	-60%	-51.0	-30%
Avg. hours per month spent on self (casual) learning	216.6	221.1	182.7	4.5	2%	-38.5	-17%	-34.0	-16%
Avg. hours per month spent performing non-business, non-job related tasks Out of Scope	0.0	0.0	0.0	0.0	-	0.0	-	0.0	-

Actual Survey Responses

Downtime Cost Bar Chart



Downtime Summary

Downtime Summary	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Downtime									
Downtime Annual Costs	$81,595	$1,218	$62,959	-$80,376	-99%	$61,741	5067%	-$18,636	-23%
Downtime FTEs	1.83	0.03	1.41	-1.80	-99%	1.39	5349%	-0.42	-23%
Total Annual Downtime Costs	$81,595	$1,218	$62,959	-$80,376	-99%	$61,741	5067%	-$18,636	-23%
Downtime Calculation Numbers									

Best Practices

Best Practices	Typical Scope	Typical Level	Target Scope	Target Level
Technology Improvements - Asset Management				
Automated Asset Management	0%	Basic	0%	Basic
Software Inventory	100%	Basic	100%	Medium
Hardware Inventory	100%	Basic	100%	Medium
Automated Software Distribution	10%	Basic	70%	Medium
Technology Improvements - Systems Management				
Virus Detection and Repair	100%	Advanced	100%	Advanced
Systems Management	25%	Basic	25%	Basic
Server Based Client Image Control	50%	Basic	50%	Basic
User State Management and Restore	20%	Basic	20%	Basic
Technology Improvements - Managed PC				
Unattended Power Up	0%	Basic	0%	Basic
Client Hardware Event Management	20%	Basic	20%	Basic
Low Impact Upgradeability	0%	Basic	0%	Basic
Technology Improvements - Scalability				
Scalable Architecture	100%	Basic	100%	Basic
Low Risk, High Quality Vendor/Provider Selection	0%	Basic	0%	Basic
Technology Improvements - Business Protection				
Fault Tolerance	100%	Advanced	100%	Advanced
Automated Backup and Restore	60%	Basic	60%	Basic
Hardware Physical Security Management	95%	Basic	95%	Basic
Technology Improvements - Service Desk				
Service Desk Problem Management and Resolution	0%	Basic	0%	Basic
Client Remote Control	50%	Basic	50%	Basic
Process Improvements - User Management				
Enterprise Policy Management	50%	Medium	50%	Medium
Locked User Environment	50%	Basic	50%	Basic
Data Security Management	95%	Medium	95%	Medium
Change Management	20%	Basic	20%	Basic

Best Practices	Typical Scope	Typical Level	Target Scope	Target Level
Process Improvements - Standardization				
Vendor Standardization	100%	Advanced	100%	Advanced
Platform Standardization	100%	Medium	100%	Medium
Application Standardization	100%	Medium	100%	Medium
Centralized and Optimized Procurement	100%	Basic	100%	Basic
Process Improvements - Practice Management				
More Time Spent Planning Versus Implementing	100%	Basic	100%	Basic
Service Level Tracking and Management	0%	Basic	0%	Basic
Capacity Planning	50%	Medium	50%	Medium
TCO Lifecycle Management	0%	Basic	100%	Basic
People Improvements				
User Training	90%	Basic	90%	Advanced
IS Training	0%	Basic	0%	Basic
IS Staff Highly Motivated	100%	Basic	100%	Basic
Stable IS Organization	100%	Advanced	100%	Advanced

ATTACHMENT C

End User

Survey Results

TCO Manager for Distributed Computing

TCO Analysis - End User Survey Results

Prepared for:
Mr. C. E. Jones, Director
Seat Mgt Section Example Agency

Prepared by:
S. Smith
Chuck Tyger

Prepared on:
10/4/2001

End User Metrics

End User Metrics	Typical	Actual	Target	Actual-Typical	% Difference	Target-Actual	% Difference	Target-Typical	% Difference
Avg. hours per month spent managing files, data and performing backups	55.7	263.3	56.4	207.5	372%	-206.9	-79%	0.7	1%
Avg. hours per month spent on programming and scripting	60.2	91.3	58.7	31.1	52%	-32.6	-36%	-1.5	-2%
Avg. hours per year spent in formal classroom learning	1,827.9	876.1	1,601.4	-951.8	-52%	725.2	83%	-226.6	-12%
Avg. hours per month spent seeking peer support	325.1	177.8	228.8	-147.3	-45%	51.0	29%	-96.3	-30%
Avg. number of hours per month spent helping others	197.3	382.6	138.9	185.3	94%	-243.7	-64%	-58.4	-30%
Avg. hours per month spent on self support	170.9	299.5	119.9	128.7	75%	-179.6	-60%	-51.0	-30%
Avg. hours per month spent on self (casual) learning	216.6	221.1	182.7	4.5	2%	-38.5	-17%	-34.0	-16%
Avg. hours per month spent performing non-business, non-job related tasks Out of Scope	0.0	0.0	0.0	0.0	-	0.0	-	0.0	-

Actual Survey Responses

Actual End User Survey Responses

Actual End User Survey Responses	Response
End User Background	
Number of end user surveys completed and used to compile results:	56
Computer usage each week:	
Less than 5 hours per week	0%
5 - 10 hours per week	7%
10 - 20 hours per week	19%
20 - 30 hours per week	49%
More than 30 hours per week	25%
No response	0%
Level of computer proficiency:	
Uncomfortable, even with routine tasks	0%
Moderately comfortable	23%
Comfortable, can solve many problems	43%
Very comfortable	26%
Power user, push the capabilities of the tools	8%
No response	0%
Length of time using a desktop computer:	
Less than one year	0%
1 - 2 years	3%
3 - 4 years	7%
5 - 6 years	12%
More than 7 years	78%
No response	0%
Number of times moved from one location to another (in last 12 months):	
None	43%

Actual End User Survey Responses	Response
Once	49%
2 times	8%
3 times	0%
More than 4 times	0%
No response	0%
Hours per month spent managing files and data and performing back-up	
None	8%
Less than 2 hours per month	51%
2 - 4 hours per month	24%
4 - 8 hours per month	17%
More than 8 hours per month	0%
No response	0%
Frequency of PC file back ups:	
Daily	0%
Weekly	10%
Monthly	21%
Every 6 months	26%
Never	43%
No response	0%
Hours per month spent programming applications or scripting	
None	79%
Less than 2 hours per month	10%
2 - 4 hours per month	6%
4 - 8 hours per month	0%
More than 8 hours per month	5%
No response	0%
Hours per year spent on formal computer training	
None	71%
Half day per year	5%

Actual End User Survey Responses	Response
Full day per year	11%
Two days per year	5%
Three or more days per year	8%
No response	0%
Time per year spent on alternative computer training	
None	78%
Half day per year	10%
Full day per year	6%
Two days per year	3%
Three or more days per year	3%
No response	0%
Time per year spent on training on custom business applications	
None	81%
Half day per year	7%
Full day per year	2%
Two days per year	7%
Three or more days per year	0%
No response	3%
Quality of training on standard PC applications received during the past year:	
Poor	3%
Needs Improvement	8%
OK	15%
Good	14%
Excellent	5%
No response	55%
End User Technical Support	
First source of support for technical support issues	
Co-worker / non-official support	19%

Actual End User Survey Responses	Response
Official department / division support	36%
Central service desk	24%
Someone else in IS department	16%
Vendor	0%
No response	5%
Best source of support for technical support issues	
Co-worker / non-official support	5%
Official department / division support	44%
Central service desk	27%
Someone else in IS department	19%
Vendor	0%
No response	5%
First source of support for "how to" issues	
Co-worker / non-official support	62%
Official department / division support	8%
Central service desk	9%
Someone else in IS department	7%
Vendor	7%
No response	7%
Best source of support for "how to" issues	
Co-worker / non-official support	37%
Official department / division support	21%
Central service desk	15%
Someone else in IS department	14%
Vendor	5%
No response	8%
Number of times per year seek official support for standard PC application and operating system issues	
Never	19%
2 times or less per year	29%

Actual End User Survey Responses	Response
3 - 6 times per year	40%
7 - 12 times per year	12%
More than 12 times per year	0%
No response	0%
Number of times per year seek non-IS support for standard PC application and operating system issues	
Never	17%
2 times or less per year	17%
3 - 6 times per year	40%
7 - 12 times per year	16%
More than 12 times per year	7%
No response	3%
Number of times per year seek official support for custom business application issues	
Never	51%
2 times or less per year	22%
3 - 6 times per year	11%
7 - 12 times per year	0%
More than 12 times per year	0%
No response	16%
Number of times per year seek non-IS support for custom business application issues	
Never	47%
2 times or less per year	26%
3 - 6 times per year	13%
7 - 12 times per year	0%
More than 12 times per year	0%
No response	14%
Number of times per year seek official support for hardware support issues	
Never	0%
2 times or less per year	40%
3 - 6 times per year	57%

Actual End User Survey Responses	Response
7 - 12 times per year	3%
More than 12 times per year	0%
No response	0%
Number of times per year seek non-IS support for hardware support issues	
Never	72%
2 times or less per year	25%
3 - 6 times per year	3%
7 - 12 times per year	0%
More than 12 times per year	0%
No response	0%
Time spent by official support to resolve user issues related to standard applications and operating systems:	
Less than 15 minutes	8%
15 minutes to 2 hours	35%
2 hours to 4 hours	23%
4 hours to 8 hours	8%
Next day or longer	10%
No response	16%
Time spent by peer support to resolve user issues related to standard applications and operating systems	
Less than 15 minutes	25%
15 minutes to 2 hours	34%
2 hours to 4 hours	13%
4 hours to 8 hours	0%
Next day or longer	0%
No response	28%
Time spent by official support to repair PCs:	
Less than 15 minutes	3%
15 minutes to 2 hours	35%
2 hours to 4 hours	23%
4 hours to 8 hours	8%

Actual End User Survey Responses	Response
Next day or longer	12%
No response	19%
Number of hours per month spent assisting others in solving systems and applications issues:	
None	28%
Less than 4 hours per month	50%
4 - 12 hours per month	19%
12 - 20 hours per month	0%
More than 20 hours per month	3%
No response	0%
Hours per month spent receiving co-workers' help in solving systems and applications issues:	
None	30%
Less than 4 hours per month	68%
4 - 12 hours per month	2%
12 - 20 hours per month	0%
More than 20 hours per month	0%
No response	0%
Hours per month spent resolving system and application issues unaided	
None	0%
Less than 2 hours per month	58%
2 - 4 hours per month	22%
4 - 8 hours per month	17%
More than 8 hours per month	3%
No response	0%
Hours per month spent on casual learning such as reading manuals or using on-line help:	
None	25%
Less than 2 hours per month	46%
2 - 4 hours per month	17%
4 - 8 hours per month	7%
More than 8 hours per month	5%

Actual End User Survey Responses	Response
No response	0%
End User Downtime	
Hours per month of downtime including service/service desk calls and wait time:	
None	8%
Less than 2 hours per month	67%
2 - 4 hours per month	17%
4 - 8 hours per month	8%
More than 8 hours per month	0%
No response	0%
Most common activity when the computer or network is down:	
Work on other tasks	98%
Wait	2%
Do the same task using manual, work around procedures	0%
End User Non-Business Computer Use	
Hours per month spent using computer for non-business or non-job related tasks	
None	17%
Less than 2 hours per month	25%
2 - 4 hours per month	16%
4 - 8 hours per month	3%
More than 8 hours per month	0%
No response	39%
End User Satisfaction	
Quality of phone support provided by the service/help desk:	
Poor	0%
Needs Improvement	5%
OK	35%

Actual End User Survey Responses	Response
Good	16%
Excellent	21%
No response	23%
Quality of the official support provided when a visit to the desk is required:	
Poor	0%
Needs Improvement	5%
OK	16%
Good	30%
Excellent	46%
No response	3%
Quality of communication with IS department regarding software standards, outages, tips and tricks, etc.:	
Poor	3%
Needs Improvement	21%
OK	19%
Good	28%
Excellent	17%
No response	12%
End User Satisfaction / Importance placed on Software Tools	
Use and criticality of personal productivity tools (e.g. word processing / spreadsheet) to job:	
Not important	0%
Somewhat important	3%
Important	19%
Very important	26%
Critical	52%
No response	0%
Quality of personal productivity tools (e.g. word processing / spreadsheet):	
Poor	0%
Needs Improvement	0%

Actual End User Survey Responses	Response
OK	10%
Good	54%
Excellent	36%
No response	0%
Use and criticality of e-mail to job:	
Not important	0%
Somewhat important	0%
Important	10%
Very important	25%
Critical	65%
No response	0%
Quality of e-mail system:	
Poor	0%
Needs Improvement	0%
OK	11%
Good	41%
Excellent	48%
No response	0%
Quality of PCs or workstations:	
Poor	0%
Needs Improvement	0%
OK	10%
Good	54%
Excellent	36%
No response	0%
Number of times necessary to reboot or restart the computer due to system "crashes" or "freezes":	
Once per month or less	58%
Once per week	21%
3 times per week	15%

Actual End User Survey Responses	Response
Once per day	3%
2 times per day or more	3%
No response	0%
Quality of LAN (speed, stability, reliability):	
Poor	0%
Needs Improvement	3%
OK	20%
Good	32%
Excellent	28%
No response	17%
Quantity of data stored on the LAN (if applicable):	
None	26%
25%	12%
50%	13%
75%	0%
100%	0%
No response	49%